

Claims

1. Apparatus for dissipating regenerated power generated from an induction motor having more than three phases, comprising:

- 5           a) an inverter for the synthesis of  $N$  different phases of alternating current output drive waveform, where  $N$  is greater than three, and connected to said motor with a first mesh connection, said first mesh characterized in that: each motor phase is electrically connected to a first inverter terminal and a second inverter terminal  $L$  inverter terminals distant from the first inverter terminal in order of electrical phase angle, where  $L$  is the skip number, and the phase angle difference between the pair of inverter terminals to which each motor phase is connected is identical for each motor phase;
- 10           b) a regenerated power sink having at least three elements and connected to said inverter with a second mesh connection;
- 15           c) a controller for altering the harmonic content of said output drive waveform;
- 20           d) a detector for detecting said regenerated power, and for signaling to said controller upon such detection, wherein said controller causes the output drive waveform to comprise one or more additional harmonic components; and

25           wherein said second mesh is characterized in that: each element is electrically connected to a first inverter terminal and a second inverter terminal, and a phase difference across each element is zero in the absence of said additional harmonic components, and is not zero in the presence of said additional harmonic components.

30           2. The apparatus of claim 1 in which said regenerated power sink is selected from the group consisting of: a resistor array, a battery array, a potential energy storage unit, or a means of returning power to an AC mains supply.

3. The apparatus of claim 1 wherein  $N$  is a multiple of three; wherein said regenerated power sink comprises three elements; wherein said second mesh connection comprises a delta connection; and a phase difference across each element is zero when said output drive waveform consists of

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third harmonic, and is not zero in the presence of said additional harmonic components.

4. The apparatus of claim 1 wherein said motor has 15 phases; wherein N is 15; wherein said output drive waveform consists of third harmonic; 5 wherein L is 6; wherein said second mesh connection characterized in that: each motor phase is electrically connected to a first inverter terminal and a second inverter terminal 5 inverter terminals distant from the first inverter terminal in order of electrical phase angle; and wherein said controller causes the output drive waveform to comprise 10 fundamental.